

Figure 1A

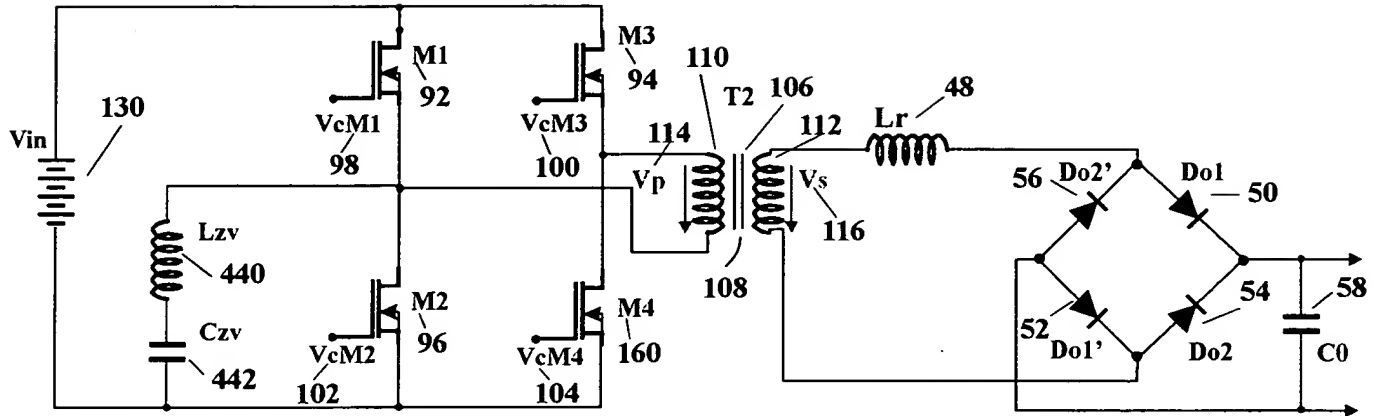
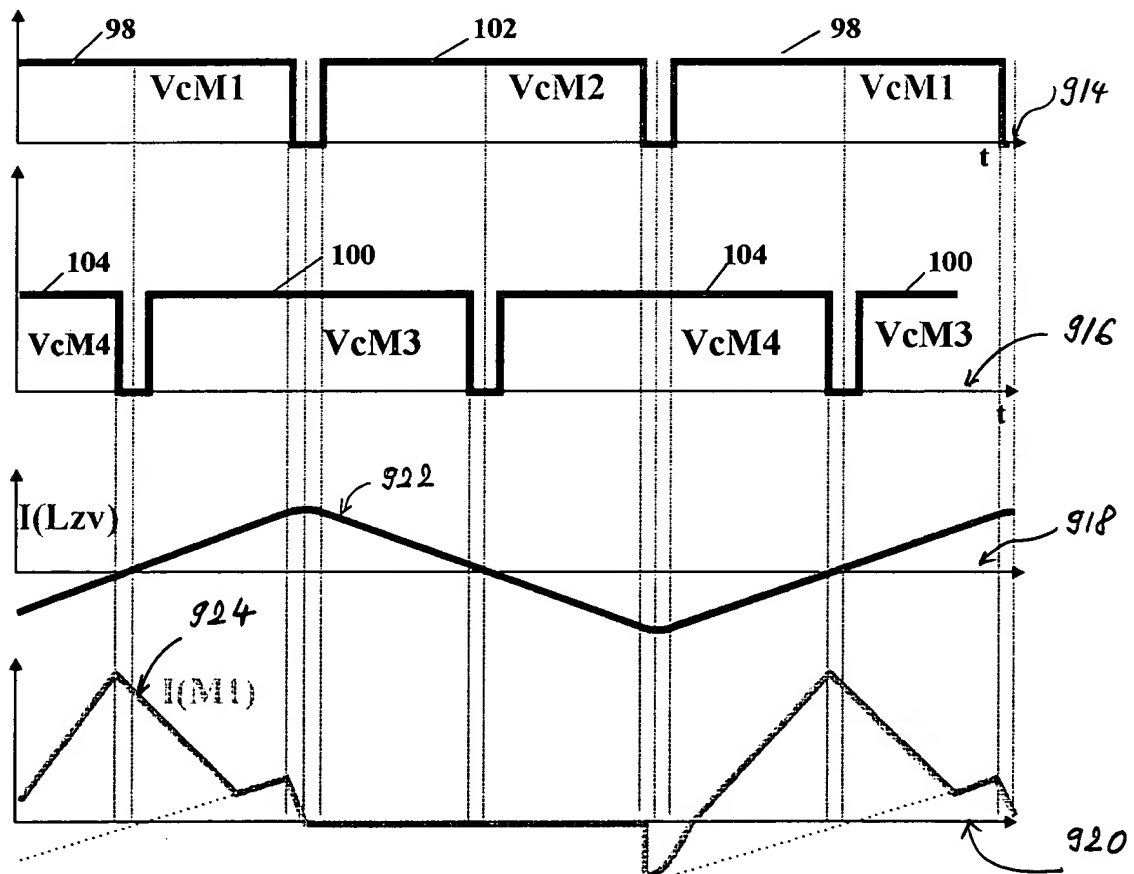


Figure 1B



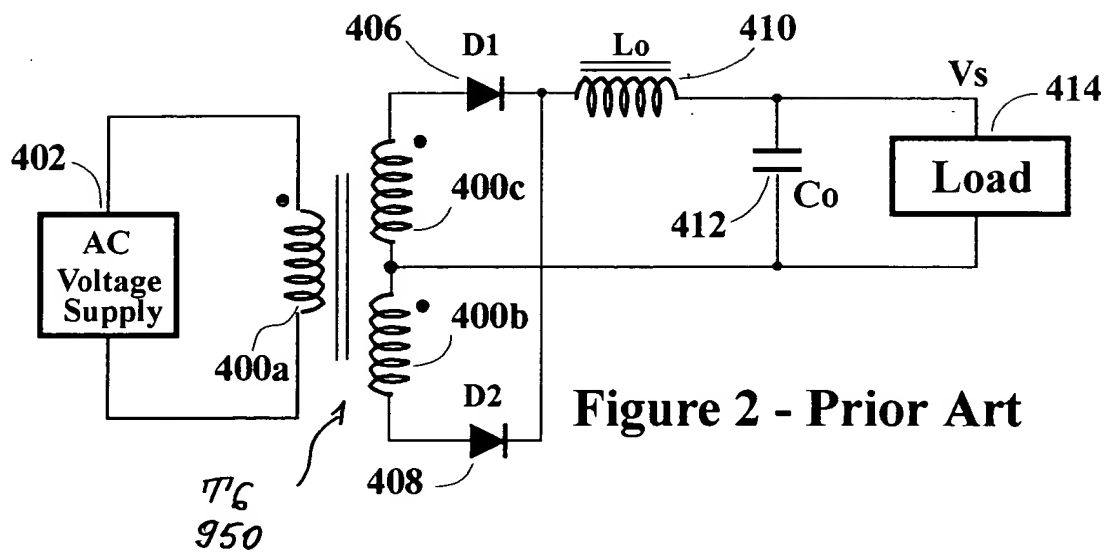


Figure 2 - Prior Art

607060-8249263

667633-34499260

Figure 3A - Prior Art

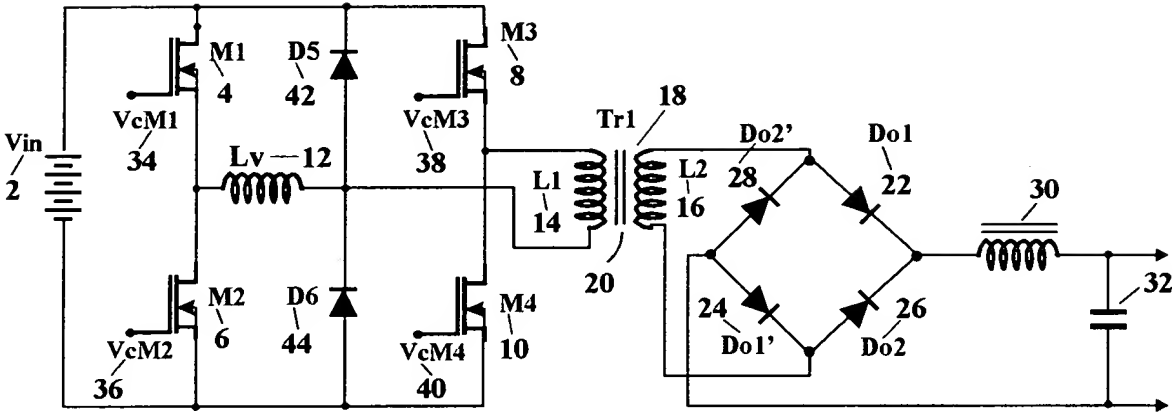


Figure 3B - Prior Art

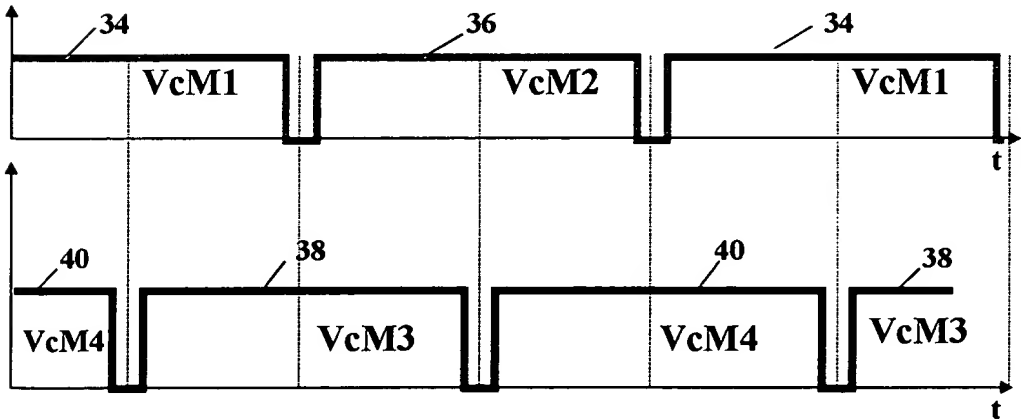


Figure 4A

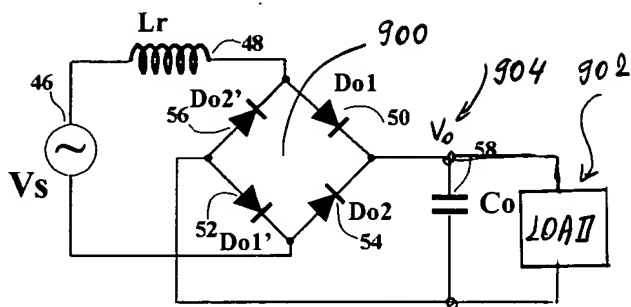


Figure 4B

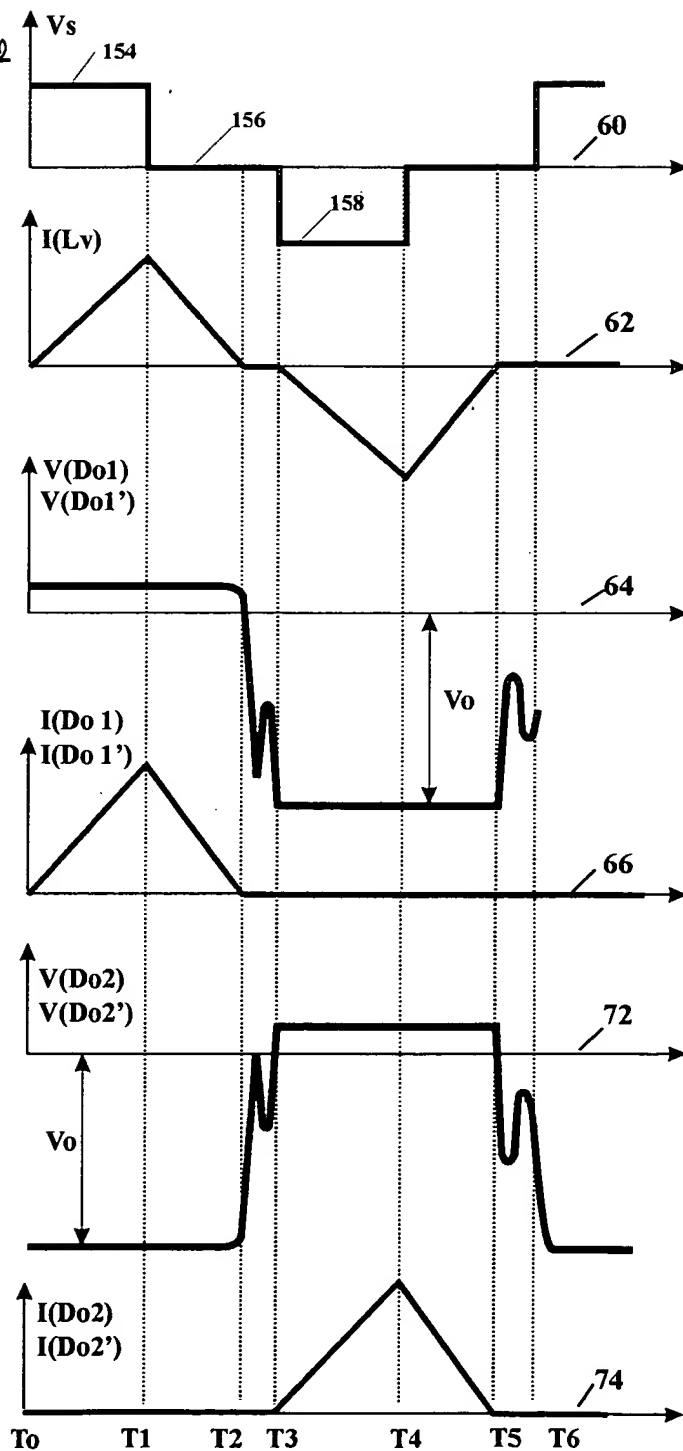


Figure 5A

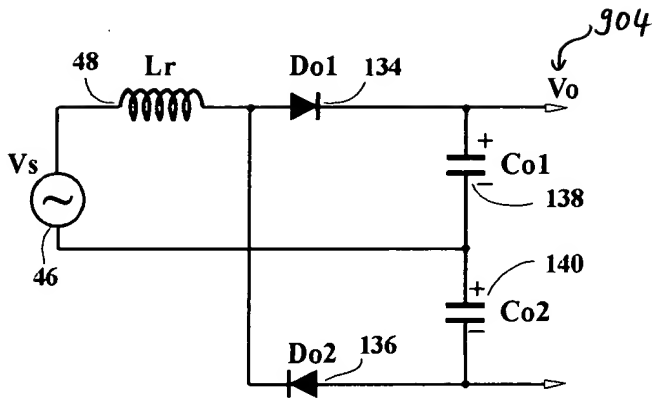


Figure 5B

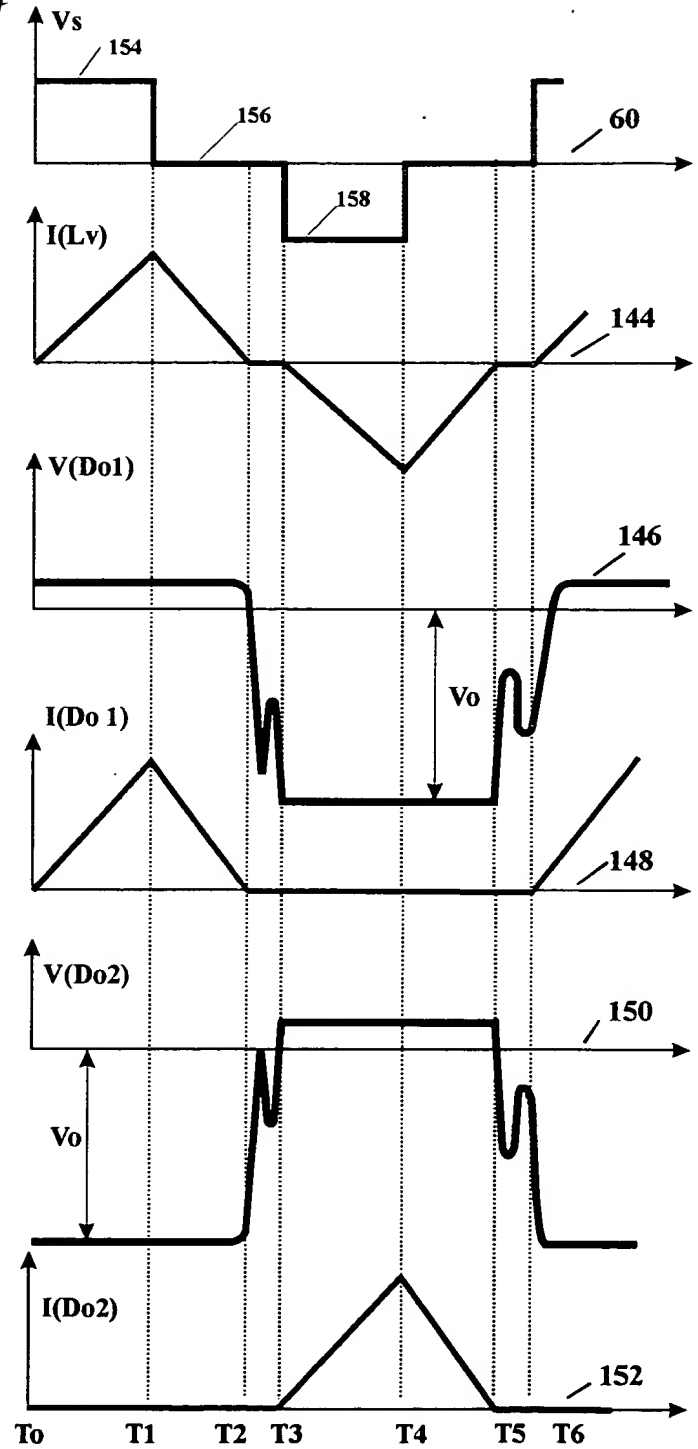


Figure 6A

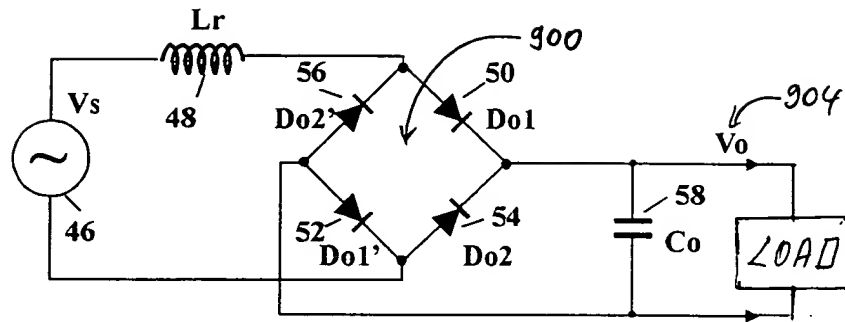


Figure 6B

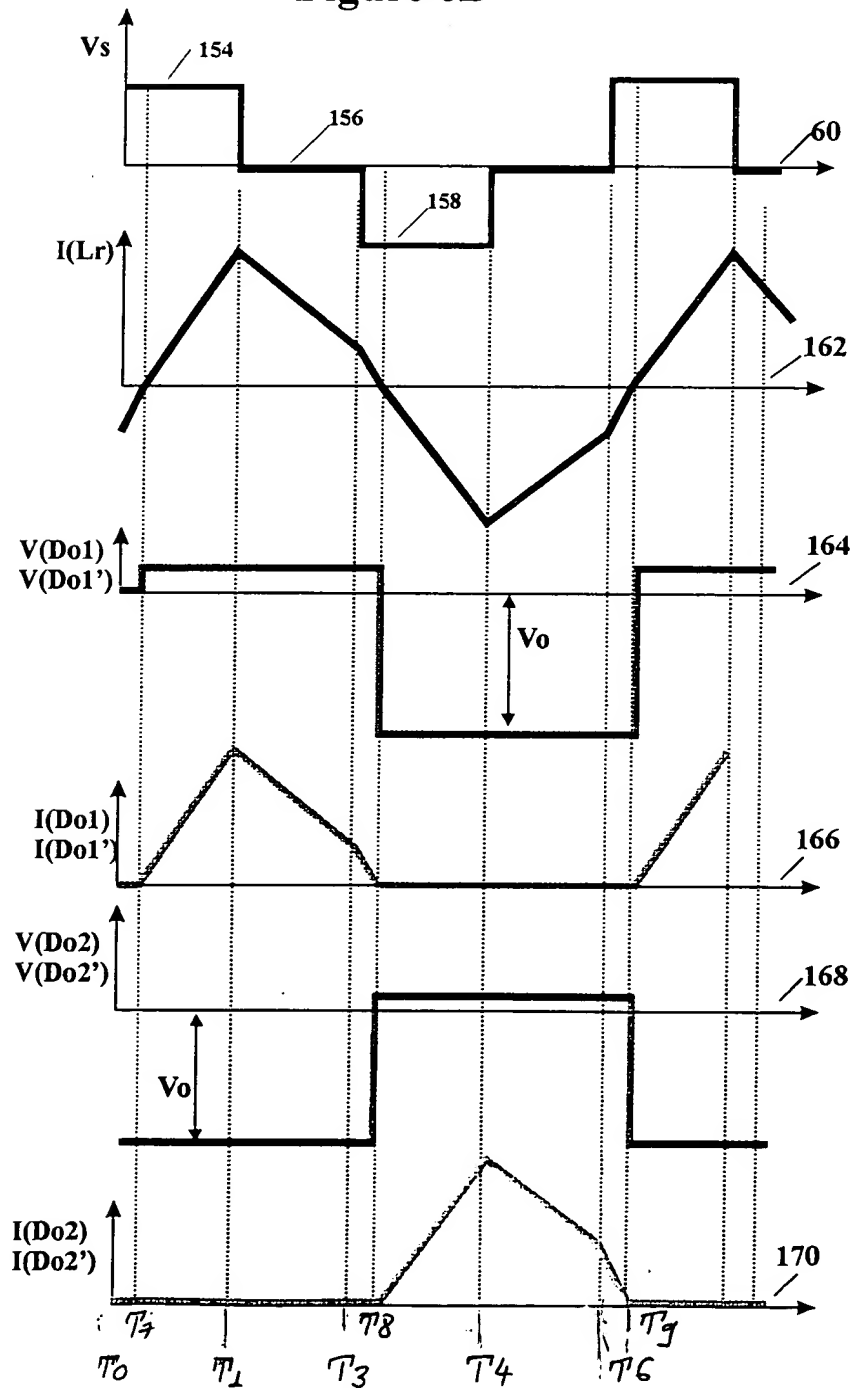


Figure 7A

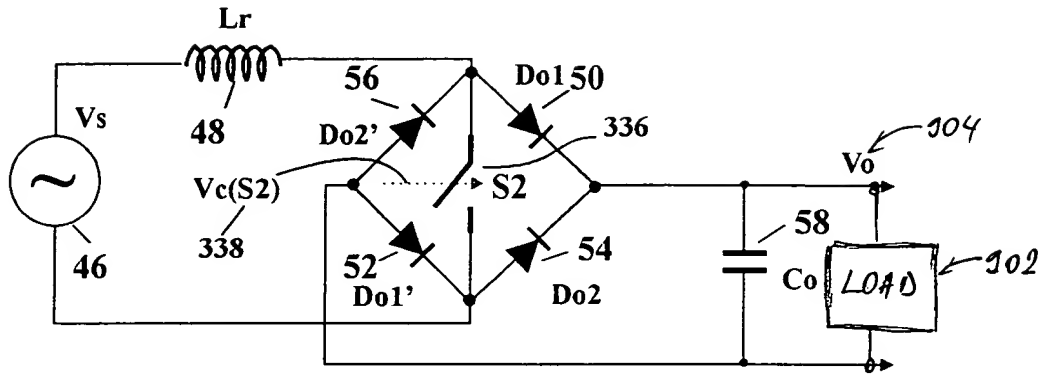
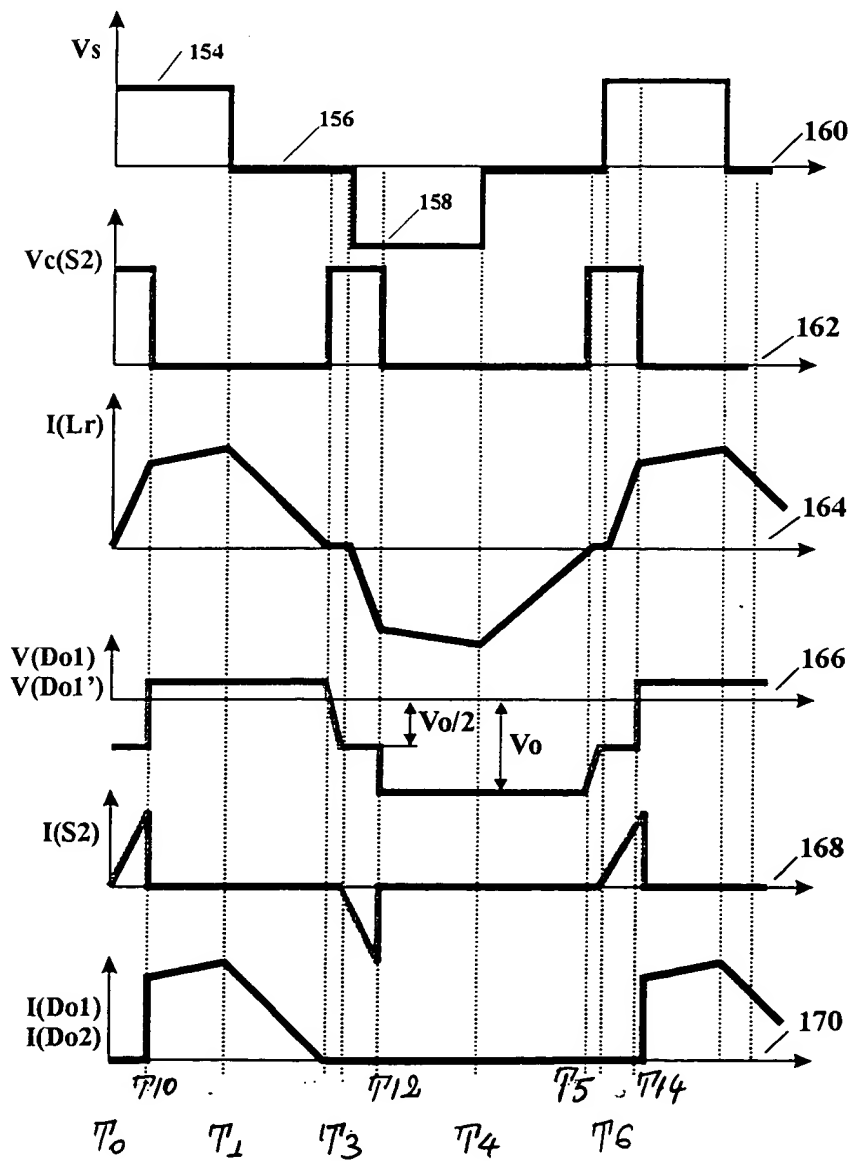
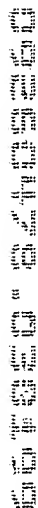
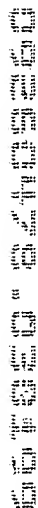


Figure 7B







[illegible][illegible]

The timing diagram illustrates the voltage and current waveforms for a power electronic circuit over a sequence of time intervals:  $T_0$ ,  $T_1$ ,  $T_2$ ,  $T_3$ ,  $T_4$ ,  $T_5$ , and  $T_6$ .

- $V_s$  (154):** The source voltage is a step function. It is at a high level from  $T_0$  to  $T_1$ , drops to a low level at  $T_1$ , and returns to the high level at  $T_5$ .
- $V_{c1}$  (156):** The voltage across capacitor  $C_1$  is high from  $T_0$  to  $T_1$  and low from  $T_1$  to  $T_5$ . It returns to high at  $T_5$ .
- $V_{c2}$  (158):** The voltage across capacitor  $C_2$  is low from  $T_0$  to  $T_1$  and high from  $T_1$  to  $T_5$ . It returns to low at  $T_5$ .
- $I(L_v)$  (60):** The load current  $I(L_v)$  is zero from  $T_0$  to  $T_1$ . It ramps up linearly from  $T_1$  to  $T_2$ , remains constant at its peak value from  $T_2$  to  $T_3$ , ramps down linearly to zero at  $T_4$ , ramps down linearly to a negative peak value from  $T_4$  to  $T_5$ , and returns to zero at  $T_6$ .

The timing diagram illustrates the voltage and current waveforms for a power electronic circuit over a sequence of time intervals:  $T_0$ ,  $T_1$ ,  $T_2$ ,  $T_3$ ,  $T_4$ ,  $T_5$ , and  $T_6$ .

- $V_s$  (154):** The source voltage is a step function. It is at a high level from  $T_0$  to  $T_1$ , drops to a lower level at  $T_1$ , and returns to the high level at  $T_5$ . The label 154 points to the high level, 156 points to the low level, and 60 points to the rising edge at  $T_5$ .
- $V_{c1}$  (704):** The voltage across capacitor 1 is a step function. It is high from  $T_0$  to  $T_2$  and drops to zero at  $T_2$ . The label 704 points to the high level, and 158 points to the falling edge at  $T_2$ .
- $V_{c2}$  (706):** The voltage across capacitor 2 is zero until  $T_3$ , where it steps up to a constant high level and remains there until  $T_5$ . The label 706 points to this high level.
- $I(L_v)$  (62):** The current through inductor  $L_v$  is a triangular waveform. It ramps up linearly from  $T_0$  to  $T_1$ , ramps down linearly from  $T_1$  to  $T_2$  (reaching zero at  $T_2$ ), remains at zero until  $T_3$ , ramps down linearly from  $T_3$  to  $T_4$  (reaching a negative peak), ramps up linearly from  $T_4$  to  $T_5$  (returning to zero), and remains at zero until  $T_6$ . The label 62 points to the zero-current segment between  $T_5$  and  $T_6$ .

Figure 12A

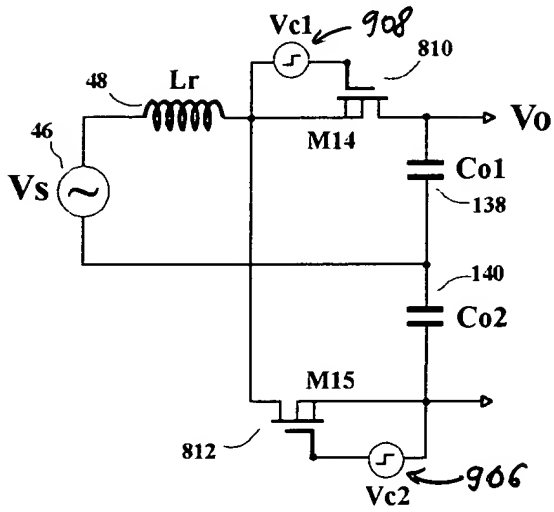
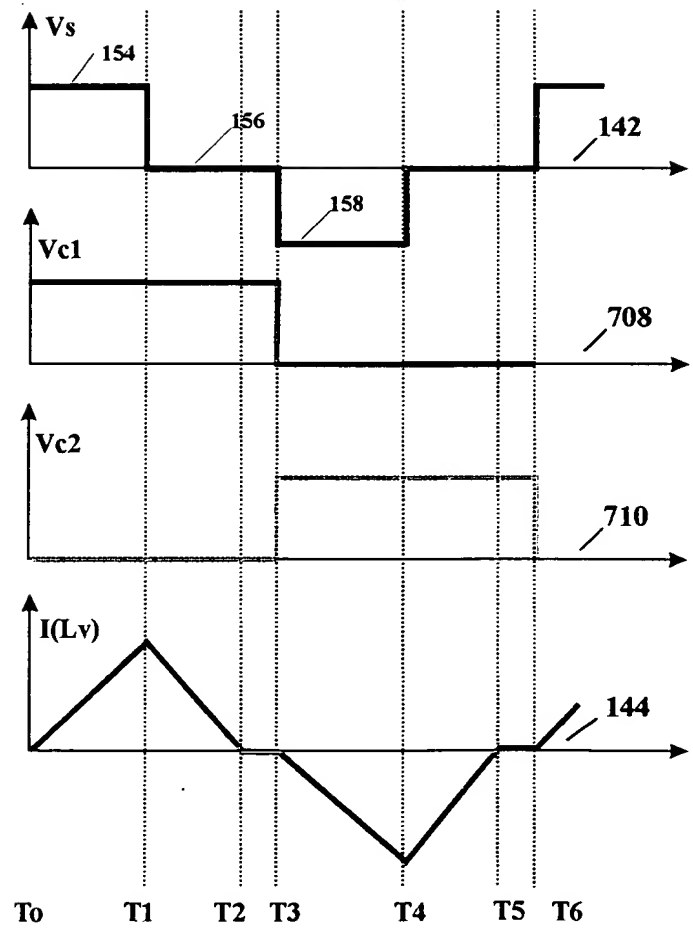


Figure 12B



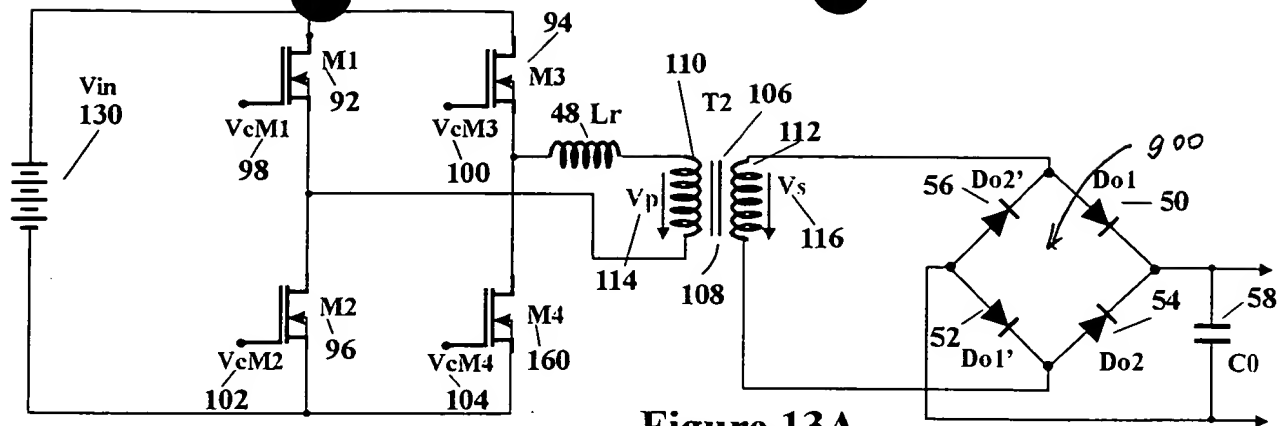


Figure 13A

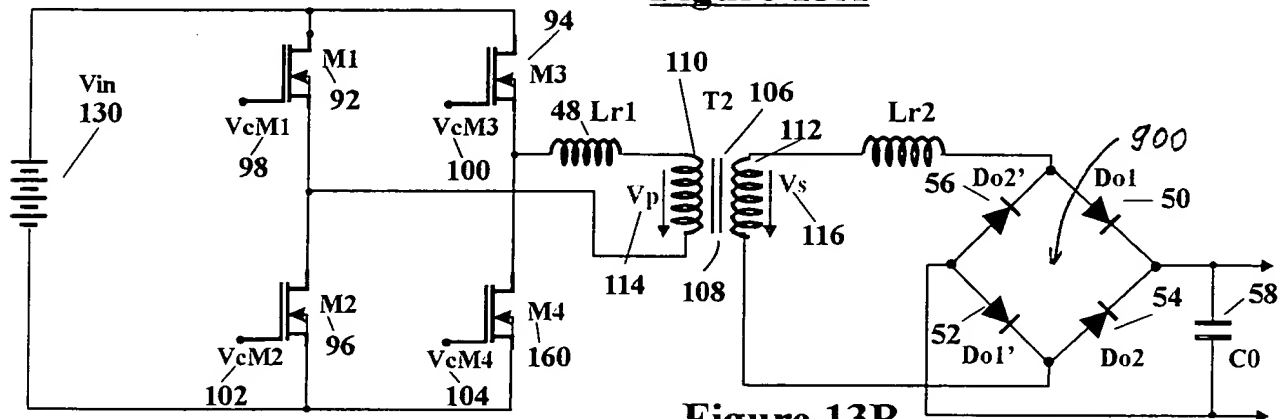


Figure 13B

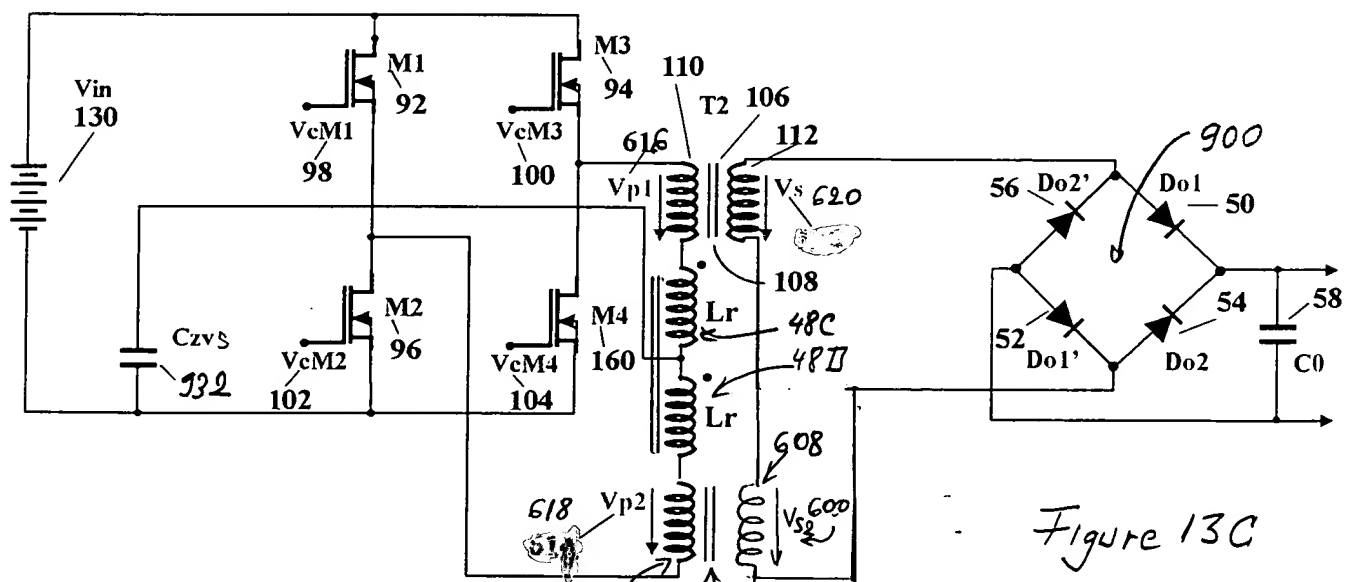


Figure 13C

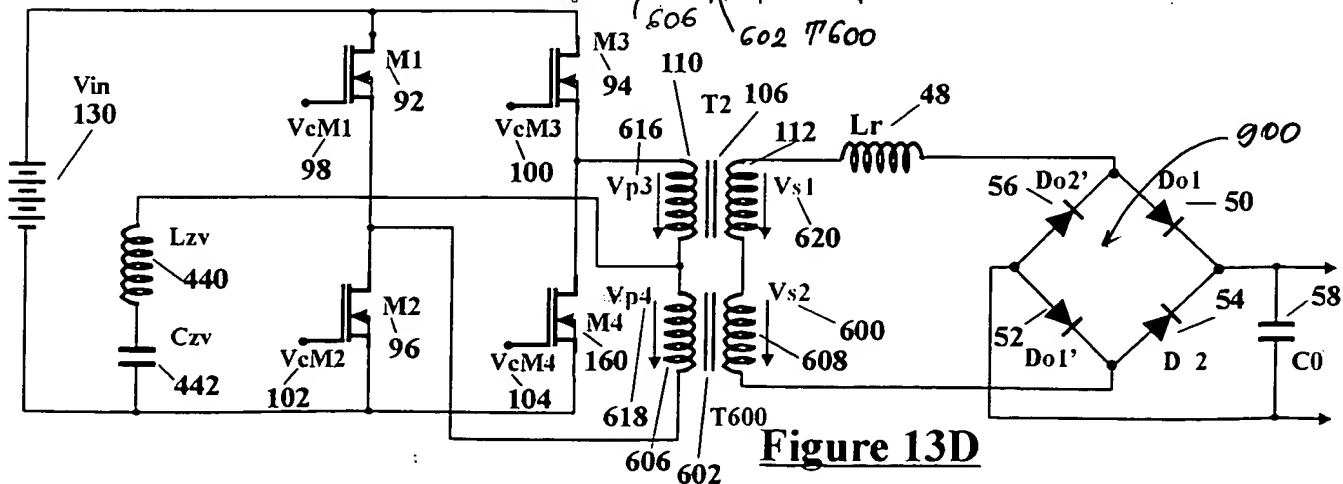


Figure 13D

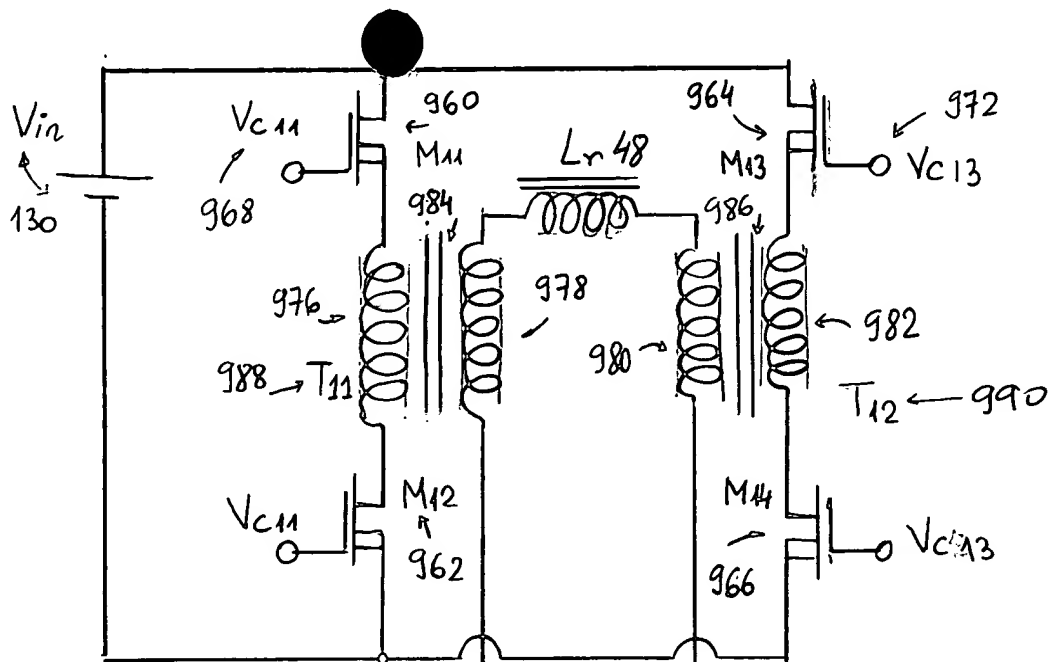


Fig. 14A

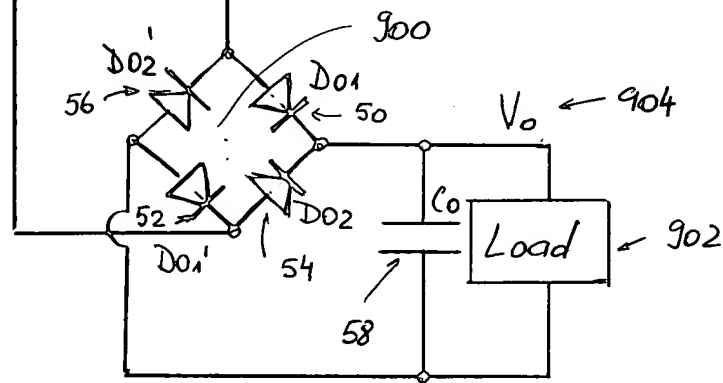


Fig. 14B

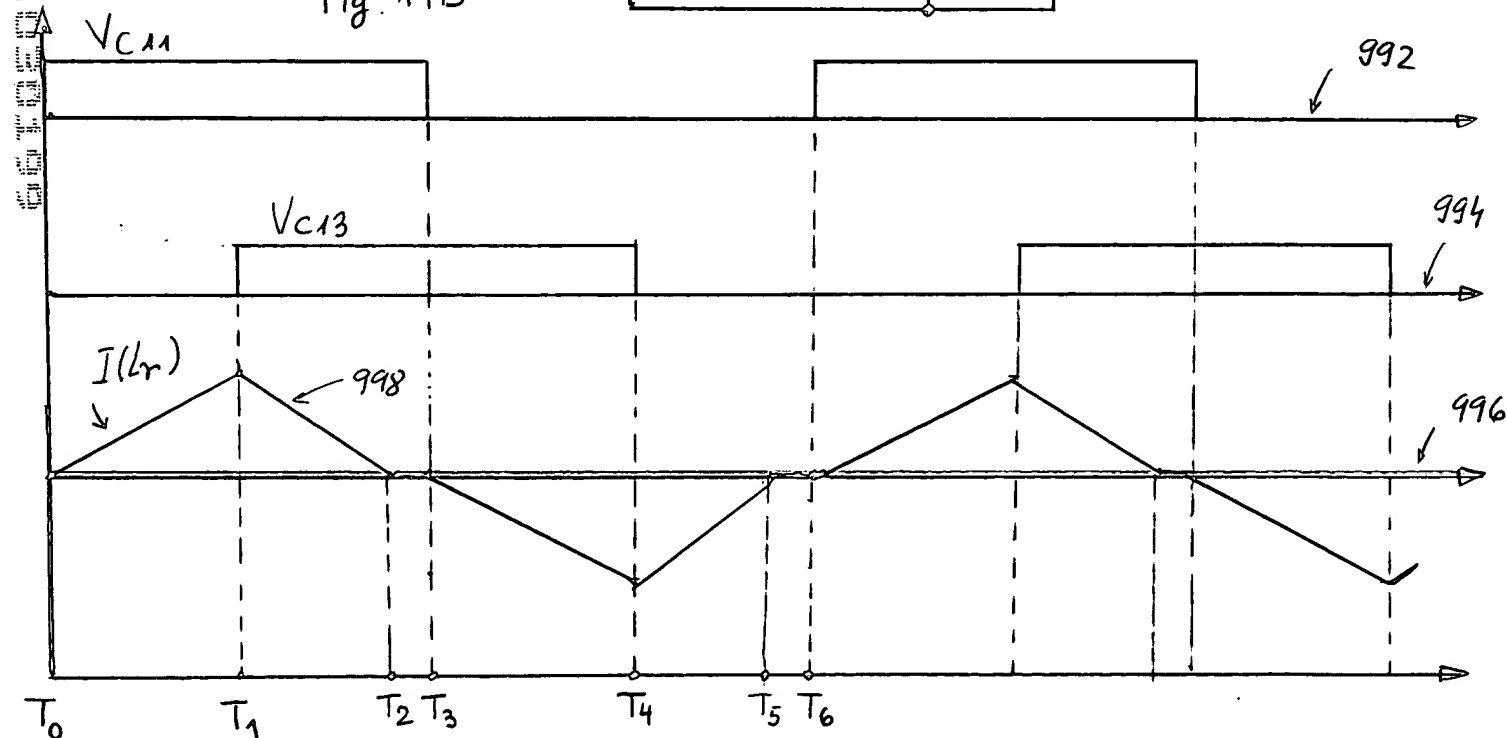


Figure 15

